

Such cases are exceedingly rare, but they are easily recognized, and require exceptional judgment, and absolute obedience to the physician's orders on the part of the nurse.

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## FRENCH HYDROTHERAPY

(DIVONNE-LES-BAINS)

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PROBABLY but few nurses in America have an acquaintance with the several water-cures in Southeastern France and neighboring Swiss localities extending beyond their names alone. Aix, Vichy, Divonne, or Bex convey very little until the attention has been specially drawn to these places. If it has been one's good fortune to know them rather intimately, one rejoices to pass on the good word, hoping that others, nurses or not, may come and see and learn. And there really is much to learn, for with all our expert care of the sick in our own land, we often fail in just this point of hydrotherapy. To find it under ideal conditions one might try Divonne, a French *établissement* located a few kilometres from Lake Geneva in an expanse of green country, village-dotted, looking to the east on the lake towards the Alps, crowned by the eternal snows of Mont Blanc, to the west on the softer slopes of the Juras, and everywhere the charm of hill and valley, enchanting white roads, and peaceful vistas, making walking a delight and a drive a thing to be remembered. The perfection of French road-making entices bicyclers and automobilists, and there are possible excursions in all directions, both near and far. Twelve hours puts the traveller in Paris, a day in Berlin, and less than twenty-four hours in London, and the local interest is inexhaustible. This section was the scene of early Roman invasion, and while the antiquarian here beholds traces of the powerful impress of the Cæsars dear to his heart spread in half-a-dozen directions, an hour away and leading farther along the lake and up the Rhone Valley the student of later history also finds his wants supplied, and here at the touch of his hand is the château of Coppet, the home of Necker and Madame de Staël, where all the great minds of the day gathered to do honor to one of the most brilliant women the world has ever known, the residence of Voltaire at Ferney, the place of Calvin and J. J. Rousseau at Geneva, the home of Gibbon at Lausanne, and memories of Byron and the "Prisoner of Chillon" just around the lake, with many a story of proud Savoyard and prouder Frenchman. The

very name Divonne (*Divona*, fountain visited by the gods) is redolent of the Roman past and of the altar here erected to the goddess of the waters, and in the grounds of the *établissement* are found inscribed the words of the Latin poet Ausone, *Fons ignote ortu, sacer duo, perennis . . . medico potabilis haustu.*" Not one, but several springs give forth their waters here, seventy thousand litres a minute, at a temperature of six and a half degrees centigrade, and the douches are employed under considerable pressure from this temperature up to a degree of heat that apparently parboils the skin of the patient. It is the cold douche, however, either alone or as finish to the Scotch or hot douche, that does the real work, and not so greatly because of its temperature as from its manner of application, for it is in giving a cold douche—a brisk, sharp application of the hose of not more than a few seconds' duration all over the body—that Divonne doctors excel. They play their stream of water as a great artist plays his musical instrument, and new life comes from it. It is a *coup de fouet* that wakes up the life within and brings back to vigor the neurasthenic of no matter how many years' duration, replaces worn-out tissue, recreates brain and nerve, and cures a multitude of ailments of nervous or digestive origin. To do all this by such seemingly simple means requires knowledge and training and the sympathy, again, of the true artist. And back of all is the scientist, the man who *knows* what his patient needs of régime, of rest, of encouragement or repression, of moral guidance and control, and who exacts a careful obedience to his instructions. Other factors of the cure at Divonne are rest in the open air,—a great deal of this, in a delightful park (strict Weir-Mitchell rest cure first in some cases),—exercise, always out of doors, when possible, at games or walking, massage, well-ordered diet, and recreation to suit the case. Nurses are made use of only in special cases or to please the patient. Divonne is not solely given up to the very ill. There is an excellent leaven of health. Whole families come here, and to go once to Divonne is always to go again; the *visite de reconnaissance* sometimes extends itself to twenty years after the cure. If a criticism may be made against the place, it is that the month of August, the French season, is somewhat too gay, and that a company of four hundred people, half of them on pleasure bent, however well-cared for and most comfortably lodged in a vast extent of hotel space, rather interferes with the liberty of the invalid. But Divonne's doors are open all the year, and one need not be in terror of even August there. The cosmopolitan life of the fall season is interesting too, and of Divonne a recent French medical report says, "*Sa vogue grandit d'année en année, surtout dans les milieux aristocratiques et intellectuels.*" Certainly one meets delightful people at Divonne,

and it is never at all depressingly a "cure" place. It has too much space and freedom for that, and there is on the part of the management a vivid realization that the invalid wants comfort as well as cold water for his restoration to health—the comfort of a good French cuisine, good bed, good attendance, and a cleanliness that is perfection.

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## BACTERIA IN THEIR RELATION TO HEALTH AND DISEASE \*

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By the term "sterilization" is meant the destruction of bacteria by heat. This may be accomplished in two ways,—either by dry heat or by moist heat in the form of steam. Dry heat has a relatively limited application, as the temperature must be higher and the exposure longer than when moist heat is used. Knives, needles, scissors, and other metal instruments may be sterilized by direct heating in the open flame, a moment only being required. For objects that cannot be submitted to the direct action of the flame and yet can withstand prolonged heating at high temperatures, such as test-tubes, glass plates, microscope slides, and cover-glasses, the sterilizing-oven is used. Here we must obtain a temperature of at least 300° F., and maintain it for not less than one hour. The reason for this prolonged exposure to such a high temperature is that, while bacteria in their common form are not particularly able to withstand moderately high temperatures, the fruits or spores, about which we shall learn more soon, are perhaps the most tenacious of life among all the organized beings of the world. Of course, if the spores be not killed, the instrument is not sterile, as when suitable conditions of moisture and nutriment are supplied these spores will rapidly develop into bacteria.

Sterilization by steam is practised with all culture-media,—the substances in which bacteria are grown for purposes of observation. These culture-media, composed largely of decomposable organic materials, would be rendered entirely worthless if exposed to the dry method of sterilization. So too with cotton and woollen fabrics, bedding, clothing, etc. The penetrating power of steam is far greater than that of dry heat. Spores which resist the action of dry heat at very high temperatures for a long

\* Read before the nurses of Rochester City Hospital in 1892.